REMARKS BY
NASA ADMINISTRATOR
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TRITECH REGIONAL COUNCIL
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Thank you, Congressman Andrews, for that introduction. The very first word spoken from the surface of the Moon was one of the first words I had to learn at NASA Headquarters: "Houston," and it's a pleasure to be here today.

One of the challenges we face as a society -- certainly in this period of slow economic growth -- is to focus not on our present problems, but on our future. I believe one of the reasons we're having problems with our economy is that we're not investing in our future to the degree we should.

The people alive during my life have consumed more of the world's resources than all those living in prior generations of human history. We've already used more than we deserve, and now we're stealing from the future to buy the creature comforts of today. While the rest of the world gears up for the economic competition of the post-Cold War era, America is chowing down on its seed corn to feed its belly today.

Recently, NASA scientist Rick Chappell was jogging through the wildlife refuge that surrounds the launch pads at Kennedy Space Center when he noticed an armadillo by the trail. (Incidentally, this was a Florida armadillo, not a Texas 'dilla.) Later, Rick looked up and saw an eagle.

Reflecting on this experience, Rick later wrote, "I was struck by the contrast of their different approaches to life. Where the armadillo never looks up -- concentrating only on its next meal, and oblivious to the world around it -- the eagle soars quietly and majestically. It is not rooting around the ground, but is striving for the high ground -- seeking a vantage point from which to see the horizon and beyond."

The first spacecraft that landed on the Moon wasn't called the armadillo; it was the Eagle -- the symbol of America. This nation didn't become the greatest in the world by keeping our eyes on the ground. America is about broad visions, about looking over the horizon to see the future, and then blazing the trail for others to follow.

Technology is the fuel in our economic furnace. Technology creates growth. It creates whole new industries and new jobs --high paying, high quality jobs that add value to our economy.

NASA's research and development of advanced technology reaches out into the future to bring back opportunities to the world of today. Between 1979 and 1986, the new products generated from NASA science and engineering created over 350,000 new jobs in this country.

NASA has been driving technology forward ever since it was created. Apollo brought us untold bounty -- especially in medical technology. Pacemakers, CAT scans, arthroscopic surgery, intensive care monitoring equipment -- all got their start because of research NASA needed to go into space. Mission Control's computer networks and software are the great grandfathers of what runs America's telephone system, banking and credit card networks, and airline computer networks.

But we can't keep living off Apollo's bounty. Space Station Freedom will revolutionize our way of life in the 21st century the same way the Apollo program did in the 20th century.

A permanent space station will be the place where we become a true space-faring nation -- the place where we learn how to live and work in space. All of our plans to build an outpost on the Moon and explore Mars depend on using Space Station Freedom to learn how to protect astronauts' health from the effects of long duration space travel.

While these studies are going on, the space station will have dual use lab equipment where scientists can systematically study how living organisms and other materials behave without gravity. Essentially, the space station should be thought of as a research center in orbit. Researchers from universities and the private sector, and our international partners, will be able to share facilities on Freedom to do basic research in advanced materials, biotechnology, and life sciences.

Biotechnology, for instance, is expected to be the big business of the 90s, going from $4 billion a year currently to $50 billion by the end of the decade -- revolutionizing everything from agriculture to pollution control to health care. The commercial possibilities of biotechnology research in space are mind-boggling.

Product improvements developed from this research can create new jobs and save lives with new drugs and medical knowledge. For instance, the lack of gravity in space allows scientists to grow three-dimensional cell tissue and high quality protein crystals. Studying the structure of these opens up a whole new method to find the answer to some age-old diseases.

Houston is well poised to take advantage of this opportunity. The Texas Medical Center has a long history of cooperation with NASA. And of course, Johnson Space Center will be at the heart of space station development and operations.

Fully one-fifth of NASA's total budget flows through Houston. In the last fiscal year, Johnson Space Center injected $1.3 billion in the Houston economy -- that's almost half of JSC's budget. JSC employs 17,000 people -- most of them, over 13,000, through contractors. These figures paint only part of the picture of how NASA affects the economy. They do not include jobs created through subcontractors, or entire new

industries generated through NASA technology transfers to the private sector. However, it is estimated that Johnson Space Center's indirect economic impact is 1.5 to 2.5 times greater than I've indicated. Also, none of these figures consider the economic impact of tourism. Johnson Space Center attracts 850,000 visitors a year. When the new EPCOT-style visitors center opens this fall, the number of visitors is expected to double or triple.

When you add it all up, the return America receives from NASA is enormous. We invest only 1 percent of the federal budget in NASA, yet the technology we produce generates seven dollars in economic benefits for every dollar we spend. And contrary to what some people say, we don't spend any money in space. There aren't any businesses or banks up there -- yet. We spend it right here on Earth, for the people of Earth.

One of the greatest things I've discovered in my five months at NASA is how NASA research can literally revolutionize significant parts of our lives in ways you'd never suspect. When you think of the space program's accomplishments, you might think of communication satellites that give you live TV or cheap long distance calls from around the world. You might think of weather satellites that give daily forecasts and life-saving storm warnings. You might even think of using remote sensing data from space to look for oil.

All of those things changed the world, but they're old news. Let me tell you about a few exciting areas where space research has revolutionary power.

The advanced alloys and ceramics already produced by the National Aerospace Plane project could increase economic growth by an estimated $26 billion over the next 15 years and create 40,000 new jobs all throughout the economy.

One example is the creation of a new titanium alloy that's 100 times more resistant to corrosion than standard titanium. Among the many uses for this new alloy may be in replacement hip joints or in highly corrosive "sour" oil and gas wells.

Another project is called the Wake Shield -- a small satellite to be launched next year that will use the ultra vacuum of space to produce semiconductor chips that are much better than silicon. Everyone knows the impact computer chips have had on our economy in the last 20 years, especially here in Texas. Chips produced in space with new materials will let us leap-frog the competition by increasing computing speeds as much as 1000 percent.

Now, what does that increase in speed mean in real terms? It means you could replace the PC on your desk with a supercomputer. It means throwing out the keyboard because computers could be operated with voice commands. It means laser printers that print 10 times faster. It means high resolution TVs and video screens half-an-inch thick that you could hang on the wall like a picture.

But enough about computers. NASA talks a lot about hardware, but I think our most exciting work is on the ultimate in software: the human body. ¿Do any of you know someone who's had a coronary bypass? It's an ordeal! And it costs big bucks. NASA's pioneering laser research helped a California company invent a fiber optic laser to clean out clogged arteries without a dangerous heart by-pass operation. Think of the cost savings -- to say nothing of the heart attacks it will prevent.

Life on Earth is better because of the lives we've sent into space. Thank goodness we have a president that understands how important space is to the strength, and competitiveness, and future economic growth of America. President Bush and Vice President Quayle support a robust civil space program because they've seen how science and technology drives this nation forward.

Space is no longer just an experiment or a symbol. It's no longer a "luxury," the way automobiles and air travel were once viewed. Space is an essential part of our future in medicine, science, and technology.

We have to get bold again. Every time we have gone to the frontier, we've brought back more than we could ever imagine. If we want our children to have a job, and a chance for a better life when they grow up, we have to take risks and make investments. By reaching for the stars, we bring inspiration, hope, and opportunity back to Earth.

The "armadillos" of the world cannot defeat those of us who choose to be eagles. By flying higher, and seeing farther, our vision will lead the way for the benefit of all humanity.

Let me leave you with a vision of what our future in space could mean. It's early in the next century, and a woman in San Antonio goes to her doctor to receive a shot to prevent osteoporosis. That night, she sees on TV that a young astronaut at Kennedy Space Center just received the same shot to prevent bone loss before blasting off on the long journey to Mars.

That young astronaut grew up in Houston, where decades before, her father did medical research on Space Station Freedom. Her father's work had inspired her to study organic chemistry so that when the time came, she'd be qualified to go search for signs of ancient life on Mars.

The exploration of space is the most inspirational adventure of all time. Our work offers hope that our children's world will be a better place than our own. Join us as we make this vision a reality.

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